



The Orange County Water District groundwater replenishment program is the largest plant of its kind in the nation, turning 100 million gallons a day of flushed water into drinking water. (Courtesy Orange County Water District)

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## Nation's Largest Water Recycling Plant Expanding in Orange County

By David Gorn  
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California's prolonged and ongoing drought has at least one positive outcome. It has prompted water officials across the state to quickly develop new sources of water — and one of those new sources is flushed water.

The [Orange County Water District \(http://www.ocwd.com/\)](http://www.ocwd.com/) is leading the nation in [wastewater treatment \(http://www.ocwd.com/gwrs/about-gwrs/\)](http://www.ocwd.com/gwrs/about-gwrs/) to replenish groundwater supplies — and that project is expanding now, designed to eventually supply water to 2.4 million people, about 40 percent of all water needed in Orange County.

The success in turning used water into drinking water in Orange County is being copied across the state, according to David Sedlak, a professor at UC Berkeley and co-director of the [Berkeley Water Center \(http://bwc.berkeley.edu/\)](http://bwc.berkeley.edu/), which monitors the state's water policy and progress.

“Water agencies in California have been watching Orange County for years now,” Sedlak said.

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The state has set aside \$1 billion for water recycling, including treating wastewater to drinking water standards. The [Santa Clara Water Authority \(http://www.valleywater.org/\)](http://www.valleywater.org/) and San Jose consulted with Orange County officials, and they're now leading the way in Northern California. A huge "toilet-to-tap" effort is being planned by the city of Los Angeles, which could eventually top Orange County's output.

Almost every water district in the state is planning some kind of wastewater-to-drinking-water effort now, Sedlak said, and that kind of rapid progress is unprecedented.

"When you think about the normal glacial pace with which water infrastructure projects usually get built," he said, "things are moving at a lightning pace in California."

***'I think pretty soon all of the water we have in sewer treatment plants is going to be recycled.'***

— Madelyn Glickfeld, UCLA

Nowhere quicker than Orange County, which currently processes 100 million gallons of wastewater a day. When the expansion is completed in 2022, that number is expected to climb to 130 million gallons a day. The district uses reverse osmosis and filtering technology to exceed state standards for drinking water, and then it pumps that water underground to refill its groundwater basin and aquifers.

That additional underground step accomplishes a number of things. By refilling the groundwater basin, there is less danger of the [subsidence problem \(http://www.jpl.nasa.gov/news/news.php?feature=4693\)](http://www.jpl.nasa.gov/news/news.php?feature=4693) afflicting the Central Valley, where groundwater pumping has [caused the land to sink \(https://ww2.kqed.org/science/2015/08/19/central-valley-is-sinking-faster-than-we-thought-in-current-drought/\)](https://ww2.kqed.org/science/2015/08/19/central-valley-is-sinking-faster-than-we-thought-in-current-drought/) as much as 2 inches a month. Filling the aquifers also keeps saltwater intrusion from the ocean away from freshwater supplies.

And pumping it back underground might filter the water even more, and help keep the famous "ick factor" out of the conversation.



Water flows into Anaheim Lake, where it will be recharged into the Orange County Groundwater Basin. (Courtesy Orange County Water District)

In Orange County, all water flushed by residents will eventually become drinking water. And that's in the cards for much of the rest of California, said UCLA water policy researcher Madelyn Glickfeld.

"It's going so quickly," she said. "I think pretty soon all of the water we have in sewer treatment plants is going to be recycled."

Obviously, water officials have been prodded by the drought, now entering year number six in California. Recent rains have eased some of the problems for northernmost areas, but federal officials (NOAA) estimate (<http://www.wrh.noaa.gov/wrh/droughtca.php>) 87 percent of the state is still in drought, with over half in severe drought.

The state cut water allocations again this year. This time districts are getting 20 percent of contracted water, which is better than last year's 10 percent allocation but still much less than most districts need. Glickfeld said districts don't want to rely on that water.

"At the Water Replenishment District of Southern California, their goal is to stop importing water," Glickfeld said. "And they think they can."



Reverse osmosis membranes at the Groundwater Replenishment System. (Courtesy Orange County Water District)

Of course, getting new sources doesn't mean much without cutting water use. Districts also are expanding programs to conserve water.

"This is not naturally a verdant area," said Gary Gero, the new chief sustainability officer in Los Angeles County. He said Southern California may be ahead in wastewater recycling, but it's behind in water conservation.

For one thing, he'd like to switch out those expansive Southern California lawns for low-water landscaping. He said climate change is expected to increase the severity of California's droughts, so we will need more conservation, to go along with more wastewater recycling.

"I'm an all-of-the-above sort of person," Gero said. "We have to preserve every drop of this resource. So we do need to change our relationship to how we think about water and use water."

If you think about it, all water is recycled water, said Orange County Water District engineer Mehul Patel.

Patel said his problem is, he doesn't have enough of it. "We still need more, we would like more," he said.

Patel said the setup in Orange County could actually process more wastewater, if they had it. They tried to get wastewater from other districts, but they wanted to keep it — for their own wastewater recycling efforts.

And that leads to an interesting development in wastewater, Patel said:

"Right now wastewater isn't seen as a resource," he said. "But it could become a resource to the point where people may actually fight over it or the pricing of it. And people will be arguing over who has rights to that wastewater."

And that's the future, he said — where water districts may be bidding against each other to acquire flushed water.



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